Claims

1. Method for high-resolution image recording of at least one object with a microscope (10), comprising the steps of:
- positioning the object in a receptacle (20) being arranged in the optical axis of the microscope,
- generating at least two first data sets per object which represent intermediate images of the object with at least two different orientations relative to the optical axis of the microscope, and
- evaluating the data sets for obtaining quantitative three dimensional information,
characterized in that
the different orientations of the object are provided by moving the object relative to the receptacle (20).

2. Method according to claim 1, wherein said moving the object relative to the receptacle comprises a translation and/or rotation of the object by the influence of electric field forces.

3. Method according to claim 2, wherein said translation comprises at least one translation parallel and/or perpendicular relative to the optical axis.

4. Method according to claim 2, wherein said rotation comprises at least one rotation with a rotation axis parallel to the optical axis.

5. Method according to claim 2, wherein said rotation comprises at least one rotation with a rotation axis slanted relative to the optical axis.

6. Method according to claim 5, wherein said rotation axis is slanted within an angle range of up to 90 °.

7. Method according to claim 2, wherein said rotation comprises:
- a rotation in a continuous mode or for predetermined time periods and angles, and/or
- a rotation with changing rotational axes.

8. Method according to claim 2, wherein said rotation is conducted by holding the object at a fixed position by means of said electric field forces and by rotating the object by means of optical forces.

9. Method according to one of the foregoing claims, comprising steps of generating further intermediate images of the object, each with another focal plane, resp., wherein said focal planes are adjusted by scanning an objective (11) of the microscope (10) parallel to the optical axis.

10. Method according to claim 9, wherein said different orientations of the object and said scanning an objective (11) are conducted in an alternating mode.

11. Method according to one of the foregoing claims, wherein said positioning comprises suspending said object in a liquid in said receptacle.

12. Method according to one of the foregoing claims, wherein said evaluating of the resulting data sets comprises a procedure intended to remove out-of-focus light and/or reconstruct a three dimensional map/image of the imaged object.

13. Method according to one of the foregoing claims, wherein said at least one object comprises at least one eukaryotic cell,

at least one prokaryotic cell and/or at least one artificial particle.

14. Method according to one of the foregoing claims, wherein said microscope is used as a fluorescence microscope, a phase contrast microscope, a differential interference contrast microscope or a confocal microscope.

15. Imaging device, in particular for high-resolution image recording of at least one object, comprising:
- an microscope imaging system (10) with an optical axis,
- a receptacle (20) for accommodating said object, said receptacle being arranged in said optical axis, and
- a control circuit (30) being arranged for generating at least two first data sets per object which represent intermediate images of the object with at least two different orientations relative to the optical axis and for evaluating the data sets for obtaining an object image,
characterized by
a driving device (22, 32) for moving the object relative to the receptacle (20).

16. Imaging device according to claim 15, wherein said receptacle (20) comprises a chamber (21) of a fluidic microsystem and said driving device (22, 32) comprises microelectrodes arranged at walls of said chamber (21) and connected with said control circuit (30).

17. Imaging device according to claim 16, wherein said driving device (22, 32) comprises at least three microelectrodes arranged in one plane in said chamber (21).

18. Imaging device according to claim 17, wherein said driving device (22, 32) comprises at least six microelectrodes arranged in two planes in said chamber (21).

19. Imaging device according to one of the claims 15 to 18, wherein said control circuit (30) comprises a switching box (34) being arranged for switching a rotation axis of the object.

20. Method for high-resolution image recording of at least one object with a measuring device with a predetermined measurement field, comprising the steps of:
- positioning the object in a receptacle being arranged in the measurement field of the measuring device,
- generating at least two first data sets per object which represent intermediate data of the object with at least two different orientations relative to the measurement field of the measuring device, and
- evaluating the data sets for obtaining quantitative three dimensional information,
characterized in that
the different orientations of the object are provided by moving the object relative to the receptacle.

21. Method according to claim 20, wherein said measuring device comprises a microscope and said measurement field being the optical axis of the microscope.

22. Method according to claim 20, wherein said measuring device comprises an impedance measurement device and said measurement field being the receptacle itself.